RESPONSE TO COMMENTS

MassDEP issued for public review and comment the proposed *Massachusetts State Implementation Plan (SIP) to Demonstrate Attainment of the National Ambient Air Quality Standard for Ozone* (Ozone SIP). The substantive comments received, and MassDEP's responses thereto, are discussed below. In addition to substantive comments, the U.S. EPA noted typographical errors or suggested points of clarification. Minor corrections and clarifications are addressed in the final Ozone SIP submitted to EPA, but are not discussed below.

Commenters:

1. U.S. Environmental Protection Agency, Region 1
   comments dated: December 27, 2007; January 17, 2008; January 28, 2008
2. Associated Industries of Massachusetts
3. General Electric
4. St. Gobain Abrasives, Inc.
5. Bob Machaver

Summary of Comments Received and MassDEP Responses

EPA comments regarding Reasonable Further Progress (Comments #2, 3 – 12/27/07)

MassDEP should include the source of the growth factors for commercial marine and locomotive emission projections.

The last step shown in Table RFP 3 (line #8) should be revised or eliminated. Since the baselines from which the combined reductions were calculated are different, combining the percentages gives a somewhat inaccurate result.

Response:

The growth factor for commercial marine and locomotive sources has been added in Section 4.5. The last calculation in Table RFP 3 has been deleted.

EPA comments regarding control measures (Comments # 1, #17, #18 - 1/17/08)

MassDEP should include a commitment to submit the regulations listed in Table CM 1 (Section 3, *Control Measures*) to EPA as a State Implementation Plan (SIP) revision by a date certain. When MassDEP submits the SIP revision for the revised enhanced inspection and maintenance (I/M) program, it should demonstrate that its revised I/M program effectively replaces the emission reductions required by the existing program, as well as meets the requirements of

EPA's I/M rule. MassDEP should also provide a date for submittal of its power plant regulation, 310 CMR 7.29, (discussed in Section 6, *Reasonably Available Control Technology (RACT)*) as a SIP revision.

Response:

In the final SIP, MassDEP has added a column to Table CM 1 of Section 3 to include the date by which it intends to submit the listed regulations to EPA as SIP amendments. The separate I/M SIP amendment that MassDEP will submit for the revised I/M program will demonstrate that the revised program effectively replaces the emission reductions achieved by the existing program, and will meet the requirements of EPA's I&M rule. The NOx provisions of Massachusetts power plan regulation, 310 CMR 7.29, will be submitted to EPA as a SIP revision by March 1, 2008; this is noted in Section 6, RACT (page 10).

EPA comment regarding emission reductions (Comment #3 - 1/17/08**)**

Footnote #7 to Table CM 3, which provides emission reduction estimates for new post -2002 area source control measures, states that the estimates for the area source measures are based on the combined analysis of MassDEP and MACTEC (Appendix 5K, *Identification and Evaluation of Candidate Control Measures: Final Technical Support Document,* MACTEC, February 28, 2007), as part of the OTC regional ozone attainment planning process. The estimates in Table CM 3 appear to differ from the estimates in Appendix K. MassDEP should explain how these estimates were developed, or reference a specific location in the appendices where this is discussed.

Response:

MassDEP has revised Table CM 3 to make the estimated emission benefits consistent with the estimates in Appendix 5K, *Identification and Evaluation of Candidate Control Measures: Final Technical Support Document;* that document was developed by MACTEC for the OTC, with input from the OTC states. The benefits estimated for 2009 in the earlier version of Table CM 3 in the proposed Ozone SIP were calculated using the 2002 base year emissions. The revised Table CM3, consistent with Appendix 5K, estimates the reductions benefits of the control measures listed by comparing base 2009 emissions with 2009 controlled emissions for each post-2002 control measure.

Also, Appendix K does not discuss the two area source categories of solvent cleaning and architectural and industrial maintenance (AIM) coatings. These are post-2002 measures for Massachusetts and are, therefore, listed in Table CM3. These were not measures recommended for adoption by the OTC in 2006, so are not included in Appendix 5K.

EPA comments regarding anti-back-sliding (Comment #4 – 1/17/08)

The discussion of the 1-hour ozone standard control measures (Appendix 3A) concerning New Source Review should be revised to reflect the Phase I court ruling on anti-backsliding, which

requires Massachusetts to maintain the 50 ton per year threshold for VOC and NOx and a 1.2- to-1 offset ratio based on its "serious" classification under the one-hour ozone standard.

Response:

MassDEP has revised this discussion to reflect that the court set aside the provisions of EPA's Phase I Rule that would have permitted backsliding. (MassDEP decided to retain the 50 tons per year threshold for VOC and NOx 1.2- to-1 offset ratio even prior to the court decision.)

EPA comment regarding 1-hour ozone standard (Comment # 6 – 1/17/08)

The statement (Section 1.3, Page 3) that both EMA and WMA had monitored readings that met the 1-hour ozone standard for 2004-2006 is incorrect. The Chicopee monitor in WMA exceeded the 1-hour ozone standard during the 2004-2006 period.

Response:

MassDEP has deleted this statement, which it agrees was inaccurate for WMA. Only EMA met the now-revoked 1-hour standard for the 2004-2006 period.

EPA comment regarding extension of attainment date (Comments #5, #7 – 1/17/08)

EPA suggests revisions to the discussion in Section 1.1 that relates to the criteria for Massachusetts to seek an extension of the 2009 attainment year if either EMA or WMA fail to attain the standard by the 2009 attainment year.

Response;

MassDEP has revised the discussion to clarify the criteria under which Massachusetts may seek a 1-year extension of the 2009 attainment date.

EPA comment regarding trends data (comment #9, 1-17-08)

The "Air Quality Trends" section (Section 5.19.1, page 33) presents graphs of design value trends for EMA and WMA and states that the trends suggest that EMA and WMA are on track to meet the ozone standard by 2009. EPA does not agree that the trend line for the WMA design values shows it to be on track to meet 84 parts per billion (ppb) by 2009. The discussion in the introduction (Section 1.5, Page 5) seems to present a more realistic interpretation of the status of the WMA.

Response:

MassDEP agrees that while the trend data for EMA clearly shows it to be on track to attain in 2009, there is no clear trend for WMA data. MassDEP has revised the discussion to state that based upon ozone modeling results, ozone air quality trends and ozone precursor trends,

MassDEP expects that EMA will attain the 8-hour ozone NAAQS by 2009, and that, while WMA may attain by 2009, if it does not, it will be eligible for a 1-year extension of the 2009 attainment date.

EPA comments regarding 2007 ozone episodes (comment #10 - 1/17/08**)**

The discussion of high ozone concentrations in WMA on August 3 and August 30, 2007 (Section 5.19.5) never comes to a conclusion as to the significance of these two days. If the smoke did interfere with the measurement of ozone or caused enhanced ozone production on these days, then absent the smoke, what would the resulting 4th high ozone concentration be for the key sites of Chicopee and Ware? How would this effect design values and ozone trends? Is the smoke a regular occurrence, or is it a unique circumstance that might rise to the level of an "exceptional event" following EPA guidance? How do these two days impact the conclusions presented at the end of Section 5 (specifically, Section 5.20, page 48-49)?

Response:

These high monitored ozone readings in Chicopee 2007 (August 3 - 3rd highest of 103 ppb) and (August 30 – 4th highest of 98 ppb) were discussed to illustrate the unusual nature of these concentrations and to identify factors that likely contributed to these high concentrations, specifically, meteorological conditions and smoke. These contributing factors support MassDEP's view that the readings in 2007 were unusually high and that MassDEP can reasonably anticipate that the Chicopee monitor will have a 4th high reading of 84 ppb or less in 2009. This would satisfy the eligibility requirements for a 1-year extension of attainment year in 2009 for WMA.

EPA Comment Regarding Regional Ozone Attainment Modeling (1-28-08)

MassDEP should provide detailed daily emission files by state, source sector and time of year for 2002 ozone episodes. EPA Region I analysis indicates that actual hourly emission files for the electric generating sector in 2002 are higher than some CMAQ hourly emission files, and that implies that future year emissions and ozone levels may be underestimated.

Response:

The 2002 and 2009 ozone precursor emission inputs (pre-SMOKE and post-SMOKE processed files) used for the CMAQ SIP modeling runs are available in electronic format upon request to NYS DEC. MassDEP does not presently have the resources to construct the daily 2002 and 2009 emission files requested, and recommends that EPA contact the NYS DEC, which served as the lead OTC Modeling Center, to see if detailed daily emission files by state, source sector and time of year can be extracted from CMAQ input files. It is not clear that inspection of these daily emission files is needed to determine if the EGU control program is being accurately quantified in the CMAQ SIP–quality modeling runs. Future year EGU emission inventory documentation is contained in Appendix 5M to Section 5, *Attainment Demonstration*.

The CMAQ SIP-quality modeling runs performed on behalf of the OTC (and used by MassDEP) did not incorporate daily variations in EGU emissions associated with weather-induced electricity demand. The OTC approach was to use the SMOKE model to apportion annual emissions (based on annual CEM data) provided by the states in order to prepare consistent emission files using month-of-year, day-of-week, and hour-of-day temporal profiles. No adjustments for ozone or non-ozone episodes were attempted; none of the control strategies are day-specific or aimed specifically at high ozone episodes.

MassDEP recognizes that on some days actual hourly emissions may be higher than CMAQ model run emissions and that on other days actual hourly emissions may be lower than CMAQ model run emissions. However, using the CMAQ model in a relative way (as recommended by EPA guidance) helps minimize the effects of any under-estimated or over-estimated emissions in the base case (2002) that are grown out to and controlled in the future case (2009).

Future case emissions projections for the energy sector were estimated using the IPM model which was considered to be the best available tool at the time the OTC CMAQ SIP-quality modeling runs were performed (2006). The IPM model produced summer season and annual emissions, reflecting the CAIR program, the national control strategy for this sector. For consistency, the same month-of-year, day-of-week, and hour-of-day temporal profiles used to prepare 2002 hourly emission files were also used to prepare 2009 hourly emission files. To apply temporal files based upon actual 2002 hourly emission rates was considered to be guesswork since IPM does not assume that the same sources in 2002 would be operating in the same way in future-case years.

In summary, MassDEP believes that the use of consistent temporal files for 2002 and 2009 and using the CMAQ model in a relative way (calculating the percent reduction in ozone levels instead of using the actual predicted 2009 ozone levels) is the most appropriate way of assessing the effectiveness of ozone control strategies in the OTC at this time. The 2002 and 2009 ozone precursor emission inputs (pre-SMOKE and post-SMOKE processed files) used for the CMAQ SIP modeling runs are available in electronic form upon request to NYS DEC (contact Gopal Sistla at gsistla@dec.state.ny.us).

Comments regarding Reasonably Available Control Technology (RACT)

EPA Comment on Municipal Waste Combustors (MWCs) RACT (Comment #15 – 1/17/08)

The NOx RACT section does not contain an analysis of whether the current limits in Massachusetts represent RACT in light of more stringent limits adopted by other states. For example, the NOx emission limits found within Connecticut's MWC regulation are more stringent than the Massachusetts limits. EPA recommends that Massachusetts consider adopting limits similar to those adopted by Connecticut.

Response:

MassDEP will re-examine whether its current MACT regulations for MWC, 310 CMR 7.08 (2), still constitute RACT for MWCs in light of this comment. By April 1, 2008, it commits to do an additional analysis on whether it is cost effective to further reduce NOx emissions from existing MWCs. MassDEP will include stakeholders (i.e. the MWCs, municipalities, and environmental organizations) as part of this process.

MassDEP expects to propose revisions to its MWC regulations by December 31, 2008 to comply with the U.S. EPA's Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Stationary Sources: Large Municipal Waste Combustors, 40 CFR 60 subpart Cb. Based on the findings of the additional RACT analysis, MassDEP will consider whether to include a proposal for more stringent NOx limits when it proposes the revisions to the Massachusetts Municipal Waste Combustor Regulations.

EPA Comment on Glass Manufacturing RACT (Comment # 19 – 1/17/08)

Table RACT-1 indicates that Massachusetts believes its existing NOx RACT rule is sufficient to meet RACT for the glass-manufacturing category. Glass manufacturing is one of the 2006 OTC recommended categories for additional control. MassDEP should document that the one large glass manufacturing facility Massachusetts, Saint Gobain Containers (located in Milford), is currently subject to emission limits that are as stringent as those found in the OTC 2006 recommended control measure for this sector.

Response:

Since 2001, St. Gobain Containers' average NOx emissions have been 3.38 pounds/ton of glass pulled, based on stack testing. These annual stack testing data demonstrate that St. Gobain Containers' actual NOx emission rates from its glass manufacturing process are below the recommended OTC NOx limit for this category. Documentation is available for review.

Comments on Industrial, Commercial and Institutional Boiler RACT:

EPA (Comments # 14, #15, #19 - 1-17-08):

EPA recommends that MassDEP consider adopting more stringent regulations for industrial, commercial, and institutional (ICI) boilers as part of meeting Massachusetts NOx RACT obligation. Further regulation of this sector is one of the control options that the Ozone Transport Commission (OTC) states agreed to explore, as discussed in Appendix 5K, which includes recommended emission limits. The Mass DEP NOx RACT analysis in Section 6.5 does not include any discussion of consideration of this measure.

Industry Comments:

Associated Industries of Massachusetts (AIM) Comment:

AIM supports MassDEP's conclusion with respect to the adequacy of RACT for ICI boilers, noting that the sources that would be covered by any tighter RACT restrictions for this category represent some of the most vulnerable and cost-sensitive companies in the state.

St. Gobain Abrasives, Inc. Comment:

The commenter is concerned about the impact of added compliance costs and resubmitted its May 31, 2006 letter to MassDEP. That letter estimated the high costs of installing Selective Catalytic or Selective Non-Catalytic Reduction to its existing boiler and the estimated range of costs per ton of NOx reductions.

General Electric Comment:

The commenter supports MassDEP's conclusion that current RACT satisfied 8-hour ozone standard RACT requirements for ICI boilers. It resubmitted its 8-page May 2006 preliminary assessment of the technological feasibility and estimated costs of additional NOx controls at its Lynn facility.

Bob Machaver Comment:

The commenter agrees that current NOx RACT levels are technically and regulatorily justified, and that an additional reason why it is not appropriate to enhance the stringency of NOx RACT, is that two major stationary source programs will begin in 2009**:** the Clean Air Interstate Rule (CAIR) and the Regional Greenhouse Gas Initiative (RGGI). Until the impact of these programs on ozone can be evaluated, new stationary source RACT requirements are premature.

Response to all comments regarding ICI boiler RACT:

MassDEP has re-examined this issue in light of the comments it received, but maintains that the position presented in the RACT analysis in its proposed Ozone SIP (Section 6, RACT) is appropriate. MassDEP agrees with the commenters who stated that imposition of tighter RACT restrictions for the ICI boiler category would not be reasonable.

With respect to EPA's comments, MassDEP agrees that the OTC analysis of potential control measures summarized in Appendix 5K, *Identification and Evaluation of Potential Control Measures,* includes a recommendation that OTC member states pursue, as necessary and appropriate, controls on ICI boilers located at major sources consistent with guidelines shown in Table 4.2 of Appendix K. (As noted in Appendix K, Section 4, ICI boilers located at minor sources generally are not subject to emission limits.)

Consistent with the OTC review, MassDEP analyzed the potential for tighter controls on ICI boilers within Massachusetts. It convened a stakeholder meeting in April 2006 to advise facilities with ICI boilers ≥100 mmBtu/hour that tighter RACT measures were being considered under the OTC regional ozone attainment planning process. Subsequent to the meeting, MassDEP asked facilities to submit information concerning the existing NOx and SO2 control technologies for each boiler and the technological feasibility and estimated costs of additional controls. MassDEP received comments from six facilities in 2006, all of which cited technical or economic constraints on the adoption of tighter RACT controls on boilers at their respective facilities. (As noted above, some of these comments were resubmitted as official comments on the proposed Ozone SIP.)[1]

With the adoption, in May 2007, of the Massachusetts Clean Air Interstate Rule, 310 CMR 7.32 (MassCAIR), all large electric generating units (EGUs) and facilities with boiler ≥250 mmBtu/hr became subject to the Mass CAIR NOx cap-and-trade program, which constitutes RACT for these facilities.

With respect to boilers of ≥100 – 250 mmBtu/hour, MassDEP reviewed the comments submitted by facilities following its 2006 stakeholder meeting. The comments indicated that a number of facilities were subject to constraints that made additional control measures infeasible from an engineering perspective. They also indicated that the likely costs of additional controls for many of the facilities made them infeasible from an economic perspective. Based on these comments, MassDEP determined that it is not appropriate and necessary to adopt additional controls for ICI boilers of 100 – 250 mmBtu/hr and that current emission limits imposed pursuant to 310 CMR 7.19 represents RACT. In making this determination, MassDEP considered that many of the affected facilities are part of the remaining industrial base in the state, and that to the extent that EPA has not issued updated RACT requirements that would be applied to comparable sized sources on a national basis (especially in upwind states outside of the OTC region), tighter requirements on Massachusetts' sources imposes a unreasonable economic hardship on these facilities.

MassDEP continues to maintain that the NOx controls required by 310 CMR 7.19, *Reasonably Available Control Technology (RACT) for Sources of Oxides of Nitrogen (NOx)*, constitute NOx RACT under the 8-hour ozone standard for the ICI boiler category[2] as well as for major sources of NOx with ICI boilders for which single-source RACT determinations were made pursuant to 310 CMR 7.19(12).

With respect to the comment of Bob Machaver, MassDEP agrees that the Massachusetts CAIR program, 310 CMR 7.32, which includes a cap on NOx emissions from large electric generating units and large boilers will have an impact on NOx emissions. Also, the reduction of electrical demand, whether it takes place in the context of RGGI or otherwise, may reduce NOx emissions. However, RACT requirements are not based on whether an area, once it has been designated nonattainment, needs additional reductions for the purposes of attaining the standard. Rather,

[1] Industry responses submitted in 2006 and in response to the proposed Ozone SIP are available for EPA and public review.

[2] The source categories covered in this regulation are: large, medium and small boilers; stationary combustion turbines; stationary reciprocating internal combustion engines; glass melting furnaces; and miscellaneous sources.

RACT is a technology-based requirement for nonattainment areas. So while, MassDEP agrees with the commenter with respect to his support for MassDEP's conclusions regarding RACT for ICI boilers, its RACT analysis for this category was independent of the anticipated impact of either CAIR or RGGI on ozone concentrations in Massachusetts. (As discussed in the Ozone SIP, however, sources covered by CAIR are deemed to meet RACT.)

EPA comment regarding Transportation Conformity (# 20)

The date or version of the Statewide/Regional Travel Demand Models used in preparing the reasonable further progress plan, the attainment demonstration, and the motor vehicle emissions budgets (transportation conformity budgets) should be identified.

Response:

The Massachusetts Office of Transportation Planning (EOT) used the latest version of the Massachusetts Statewide Travel Demand Model, with the latest planning assumptions, for the Reasonable Further Progress analysis, the 2009 attainment demonstration, and the conformity budget. While the Statewide Travel Demand Model is often updated, there are no specific dates or version numbers attached to the updates. The version used for the 2008 and 2009 conformity budgets was the latest update as of 10/17/07.